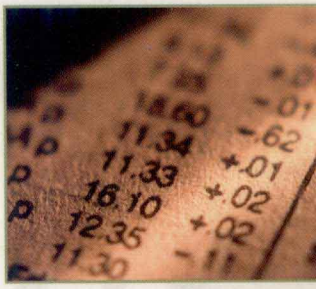
Accounting for Derivatives and Hedging



Mark A. Trombley

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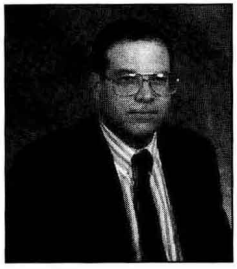

Mark A. Trombley is Associate Professor and Eller Fellow in Accounting at the University of Arizona. He has served as visiting professor at the University of Washington and as a lecturer at San Jose State University. From 1993 to1998 he was a KPMG Peat Marwick Research Fellow. His academic accomplishments include publications in the *Accounting Review, Contemporary Accounting Research, Journal of Accounting, Auditing and Finance,* and many other scholarly and professional journals. He also acts as editorial referee for many of the top accounting journals.

Professor Trombley received an MBA degree from the University of California at Berkeley and a PhD in Management from the University of Washington. Prior to entering the academic world, he spent nine years in public accounting, most recently as senior audit manager at a Big-5 CPA firm.

Preface

PURPOSE OF THIS BOOK

In establishing standards to account for derivatives transactions and hedging activities, the Financial Accounting Standards Board (FASB) has created a detailed and complex system of accounting rules. This set of regulations presents challenges to many accountants who tend to have only limited exposure to derivatives and to be somewhat unprepared to address the conceptual issues presented by complex hedging transactions. The purpose of the book is to provide a framework to allow accountants and businesspeople not only to understand the accounting issues related to derivatives and hedging but also to become familiar with the mechanics and uses of common types of derivatives, particularly in hedging applications.

This book is suitable for use at the undergraduate level as part of an advanced accounting course, an accounting theory course, an omnibus-style current accounting topics course, or similar courses offered in Masters of Accounting, 150-hour, or MBA programs. The book could also serve as the basis for an independent study course at the undergraduate or graduate level.

A word of caution is in order. Although users of this book will be able to develop a basic understanding of common types of derivatives and of the accounting issues related to using common derivatives in hedging applications, many theoretical and practical problems arising in this area are well beyond the scope of this book. As of this writing, the FASB's Derivatives Implementation Group (DIG) had issued nearly 200 Issues Summaries. Each of these represents a response to a complex problem that practicing accountants concluded could not be resolved without the involvement of the DIG experts. Because of the immense variety of derivatives types and the myriad uses that creative businesspeople find for them, it is likely that even after reading this book, an accountant will face issues in practice for which the solution is not immediately clear.

OVERVIEW

The book is organized into six chapters:

- Chapter 1 introduces the idea of hedging and explains the mechanics of several basic types of derivatives commonly used in hedging applications.
- Chapter 2 provides initial exposure to the derivatives accounting framework under which the required accounting is determined by the designation of derivatives as either fair value or cash flow hedges. Each accounting variation is illustrated using a single type of derivative, commodity futures contracts.

- Chapter 3 deals with accounting for hedging applications using interest rate swaps, one of the most commonly used derivatives for managing interest rate risk. The material in the chapter primarily deals with plain vanilla interest rate swaps, although nongeneric swaps are covered briefly.
- Chapter 4 focuses on other interest rate hedging, including hedging involving interest rate futures, interest rate options, caps, and floors. This chapter also provides exposure to the design of effective hedges using duration methods.
- Chapter 5 addresses foreign-currency hedging, probably the most widely practiced hedging activity for US companies. Coverage includes the uses of currency forward contracts and options to hedge exposed foreign currency assets and liabilities, committed and forecasted foreign currency transactions, and net investments in foreign operations.
- Chapter 6 introduces various topics, including accounting for embedded derivatives, disclosure requirements, auditing issues, and international accounting rules.

USING THE BOOK

Prerequisites

Significant effort has gone into reducing the amount of prior knowledge required for the comprehension of the material in this text. In particular, the accountant with minimal prior exposure to topics in finance should not be seriously disadvantaged because finance concepts are explained when they are first used. Knowledge of some basic material is assumed, however, including concepts from financial accounting and the ability to make present value calculations. Familiarity with Microsoft Excel® spreadsheet functions are also useful because they are referred to in certain parts of the text and in some end-of-chapter problems to simplify calculations.

Pedagogical Conventions

Because of the potential complexity of the material in the derivatives and hedging areas, a number of simplifying conventions have been adopted in presenting the material included in the book, including these:

- *Focus on common derivatives types.* A large number of exotic derivatives types are used today, and more are continually being invented. No attempt has been made to include encyclopedic coverage of every type of derivative. Instead, the text focuses on derivatives types that are most commonly encountered in practice, including futures, swaps, forwards, and options. By understanding the applications and accounting requirements for these basic types of derivatives, the accountant will have a suitable foundation from which to analyze more complex derivatives when he or she encounters them in practice.
- *Account terminology.* Every derivative must be shown at estimated fair value, which means that the primary issue in accounting for derivatives is whether

the change in fair value should be recognized in earnings immediately or deferred and recognized in earnings later. To emphasize this issue and to eliminate potentially confusing account titles, an account called "Earnings" is used when an entry that affects earnings is made. In practice, of course, more descriptive income statement account names would be used.

- *Shortcut method.* The "shortcut" accounting method allowed by the accounting rules greatly simplifies the accounting for interest rate swaps. The swap examples in the text make the assumption that the swaps qualify for the shortcut method. Although the text discusses the accounting when swaps fail to qualify for the shortcut method, none of the examples illustrates the accounting for this situation. There are two reasons for this. First, the computations required in accounting for swaps that do not qualify for the shortcut method are complex, and the additional complexity is not justified by any incremental conceptual insights. Second, as discussed in Chapter 6, swaps that fail to qualify for the shortcut method produce unpredictable earnings volatility, so companies tend to minimize the use of such swaps. This means that most, if not all, swaps encountered in practice qualify for the shortcut method.

Additional Resources

Additional resources available or planned to support the use of the book include:

- Solutions Manual with detailed solutions to end-of-chapter questions, exercises, and problems.
- Text Website (www.mhhe.com/trombley) with links to online resources including articles, tutorials, glossaries, and other materials.

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Mark A. Trombley

Brief Contents

Table of Contents

Chapter One

Introduction to Derivatives and Hedging

Learning Objectives

After completing this chapter, you should:

1. Be able to explain the three characteristics that define a derivative.
2. Be able to describe the two fundamental derivative types, options and forward contracts.
3. Be conceptually familiar with the mechanics of futures contracts and swaps.
4. Understand the use of derivatives in investing.
5. Understand the use of derivatives for hedging in risk management.
6. Be able to explain the concept of hedging.

FINANCIAL INSTRUMENTS

Companies in today's economy face many types of financial and operating risks. In response to these risks, many new and complex financial instruments have appeared to allow companies to manage and reduce risks. Many such financial instruments consist of traditional debt or equity securities to which risk-sensitive features have been added; others are customized instruments that allow companies to address specific risks.

Financial instruments can be separated into five broad categories:

1. Equity securities.
2. Debt securities.
3. Asset-backed securities.

4. Derivative instruments.
5. Hybrid instruments.

Examples of each of these types of financial instruments are listed in Figure 1.1.

FIGURE 1.1
Financial Instruments

Debt Securities
Adjustable rate debt Bankers acceptances Certificates of deposit Commercial paper Corporate bonds Dual currency bonds Floating rate notes Municipal bonds US government bonds Zero-coupon bonds
Equity Securities
Adjustable rate preferred stock Preferred stock
Asset-Backed Securities
Mortgage-backed securities Collateralized mortgage obligations Real estate mortgage investment conduits Securitized receivables Stripped securities Repurchase agreements
Derivatives
Forward contracts Futures contracts Forward rate agreements Put options Call options Caps Floors Collars Interest rate swaps Currency swaps Mortgage swaps Swaptions Warrants
Hybrid Instruments
Indexed bonds Convertible bonds Convertible preferred stock Covered option securities

Highly Publicized 1994–1995 Derivatives Losses

In 1994 and 1995, a number of companies were forced to report losses from trading derivatives. The publicity surrounding these cases might have motivated the Financial Accounting Standards Board to begin work on Statement 133. The following is a listing of derivatives losses that appeared in an article entitled, "Untangling the Derivatives Mess," in the March 20, 1995, issue of *Fortune*.

MILESTONES OF THE YEAR

March 1994 CS First Boston fesses up to having reimbursed a money market client for unauthorized derivatives trades in its account. Two other reimbursements follow. Total cost to the firm: about $40 million.

April Gibson Greetings reports that it has suffered $20 million of losses on a derivatives contract.

April Procter & Gamble announces $157 million of losses on leveraged derivatives.

July Federal Paper Board says it switched to mark-to-market accounting for certain leveraged derivatives, and taken a second-quarter $11 million charge. Subsequently it restated and lowered earnings for several accounting periods.

August Filing a quarterly report, Air Products & Chemicals discloses it had recently absorbed $122 million in derivatives losses.

October In connection with a tender for $4.8 billion of debt, Eastman Kodak unwinds numerous swaps and options at a cost of $220 million.

December Orange County, California, goes bankrupt.

December Bankers Trust is fined and censured by its regulators for defrauding Gibson Greetings in derivatives transactions.

January 1995 Chemical Bank discloses that unauthorized Mexican peso trades by one of its employees cost it $70 million.

February Sued because of derivatives losses in a government-securities mutual fund it ran, Piper Jaffray settles for $70 million.

Source: "Untangling the Derivatives Mess," *Fortune*, March 20, 1995. 1995 Time Inc. All rights reserved.

In 1986, the Financial Accounting Standards Board (FASB) added a major project on financial instruments to its agenda. The project was motivated by the emergence of innovative new financial instruments used by companies for risk management and by companies and investors for speculation. Between 1990 and 2000, the FASB issued numerous accounting standards pertaining to financial instruments, as shown in Figure 1.2. The focus of this book is on understanding the use of derivative financial instruments (often referred to simply as *derivatives*), and on the required accounting for derivatives established by FASB Statement 133, *Accounting for Derivative Instruments and Hedging Activities*. The FASB issued Statement 133 in response to concerns that previously issued standards were inconsistent and frequently did not result in timely recognition of the consequences of using derivatives. In Statement 133, the FASB required that all derivatives be included on the balance sheet at fair market value and established detailed accounting rules regarding the change in value of derivatives from period to period.

FIGURE 1.2 FASB Financial Instruments Accounting Pronouncements

Year	FASB Statement No.	Title	Accounting or Disclosure Requirements
1990	105	*Disclosure of Information about Financial Instruments with Off-Balance Sheet Risk and Financial Instruments with Concentrations of Credit Risk*	Required companies to make quantitative disclosures about market risks and credit risks related to unsettled financial instruments.
1991	107	*Disclosures about Fair Values of Financial Instruments*	Required companies to disclose the fair market value of unsettled financial instruments.
1993	115	*Accounting for Certain Investments in Debt and Equity Securities*	Required that trading and available-for-sale securities be shown on the balance sheet at fair market value, with changes in market value included in income [for trading securities] or in the equity section of the balance sheet as a component of other comprehensive income [for available-for-sale securities].
1995	119	*Disclosure about Derivative Financial Instruments and Fair Value of Financial Instruments*	Required disclosures about the purposes of derivative financial instruments and about how the derivatives are reported in financial statements. For derivatives used to hedge risks associated with anticipated transactions, required disclosure about the nature of the anticipated transactions and the amounts of deferred hedging gains and losses.
1998	133	*Accounting for Derivative Instruments and Hedging Activities*	Required that all derivative instruments be shown on the balance sheet at fair market value with the accounting for changes in fair value depending on the purpose of the derivative. Established new disclosure requirements superseding those in Statements 105 and 119 and amending those in Statement 107.
1999	137	*Accounting for Derivative Instruments and Hedging Activities—Deferral of the Effective Date of FASB Statement No. 133—An Amendment of FASB Statement No. 133*	Delayed the effective date of Statement 133 to fiscal years beginning after June 15, 2000.
2000	138	*Accounting for Certain Derivative Instruments and Certain Hedging Activities—An Amendment of FASB Statement No. 133*	Made certain technical changes in the way Statement 133 is to be applied to specific types of hedges.

DANGEROUS DERIVATIVES IN THE NEWS

During the 1990s, several instances of catastrophic losses resulting from trading derivatives received widespread attention in the financial press. The effect of these well-publicized events has been to give derivatives a nasty reputation as a dangerous and risky type of security. Is this reputation justified? To decide, we examine the details of three events that captured headlines: the Orange County bankruptcy, the collapse of Barings Bank, and the Long-Term Capital Management crisis. Although they are unusual, these events illustrate some of the major issues surrounding uses of derivatives.

The Orange County Bankruptcy

The Orange County Investment Pool (OCIP) acted as a mutual fund for local government agencies. In addition to money invested by Orange County, California, OCIP managed investments from 37 cities, 60 school districts, 11 water districts, and a number of Orange County subagencies such as the Orange County Transportation Authority. In total, these governmental entities had invested nearly $7.5 billion in OCIP as of November 1994. Robert Citron, the elected treasurer of Orange County, managed OCIP.

From 1991 to 1993, OCIP earned returns on invested funds in excess of 9 percent. In contrast, funds invested by the State of California investment pool were earning less than 6 percent during this same period. Citron's extraordinary success in producing high returns earned him accolades as one of the finest financial managers in government, and he won reelection easily in 1994.

Later it was learned that a large part of Citron's success had resulted from using derivatives to gamble on falling interest rates. In particular, OCIP used reverse repurchase agreements (repos) and inverse floating-rate notes ("inverse floaters"), both of which increase in value if interest rates fall. From late 1990 to late 1993, the Federal Reserve Board of Governors (the Fed) reduced the Federal Funds rate from 8 percent to 3 percent in an extended series of cuts designed to reduce the impact of a recession that began in late 1990. By correctly betting on falling interest rates during this period, Citron produced impressive returns for OCIP.

By early 1994, however, the economic recovery was complete, and the Fed began a series of rate increases. On February 4, 1994, the Fed increased the Fed Funds rate from 3 percent to 3.25 percent. This increase was followed by six additional tightening actions, and by the end of 1994, the rate had risen to 6.25 percent. In this rising interest rate environment, the derivative-based strategy that had earlier produced such impressive returns resulted in large losses. In addition, since the strategy that OCIP employed involved leverage (use of borrowed money), these losses were magnified to gigantic proportions. Total losses reached $1.7 billion by the end of 1994.

In the aftermath of the meltdown of OCIP, Orange County declared bankruptcy. Robert Citron resigned and was later indicted and convicted of securities